Syo KUROKAWA*: Anaptychiae (lichens) and their allies of Japan (5)**

黒川 道*: 日本産ゲジゲジゴケ属地衣 (5)**

12. **Anaptychia japonica** (Sato) Kurokawa Stat. nov.

Anaptychia dendritica var. *japonica* Sato in Journ. Jap. Bot. **12**: 427 (1936); Kurokawa in Journ. Jap. Bot. **30**: 255 (1955).

var. **japonica.**

Thallus foliaceus, cinerascens vel glaucescens et ad centrum saepe obscure-cinerascens, usque 5–15 cm latus, substrato laxe adantus, laciniatus; laciniae crebre dichotome vel interdum subdigitatim divisae, sublineares, superne planae vel leviter convexae saepe subimbricatae, 0.7–2 mm latae et 150–250 μ crassae, soraliis subterminalibus saepe praeditae, sorediis farinosis; subtus ecorticatae stuppeaeque, albae et ad centrum saepe caesio-fuscatae, in marginibus rhizinis nigris, simplicibus et demum squarroso-ramosis, 1–3 mm longis ornatae.

In sectionibus transversis laciniarum cortex superior aequaliter vel subaequaliter incrassatus, 30–90 μ crassus, parte exteriore obscure cinerea ca 20 μ crassa, stratum gonidiale 20–40 μ crassum, sub stratum corticale situm, continuum, gonidiis 6–10 μ in diam., stratum medullare 70–100 μ crassum.

Apothecia 1–5 (raro 8) mm lata, superficialia, subsessilia, in marginibus lacinulis dense praedita, disco concavo, fuscescenti leviter albo-pruinosoque, receptaculo thallo concolore. Hymenium hyalinum, ca 150 μ altum, J+coerulescens; epithecium brunnescens; excipulum proprium una cum hypothecio hyalinum, ca 30 μ altum, J+coerulescens; paraphyses filiformes, in apicibus parum incrassatae; asci oblongo-clavati, magnitudine 120–150×29–33 μ, 8-spori; sporae brunnescentes, ellipsoideae, medio vulgo levissime constrictae, magnitudine 30–46×15–20 μ, 1-septatae 2-loculares, loculis ovatis rhomboidalibusve, demum mox vesiculis parvis terminatis.

Reaction: Th. K+yellow; med. K+yellow, PD±pale yellow.

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** 資源科学研究所業績 第 981.

Chem. ingr.: atranorine, zeorin.

Hab.: among mosses on rocks or on bark of trees.

Distr.: Japan (Honsyu, Shikoku, Kyusyu) and Formosa.

Jap. name: Kuro-asi-gezigezigoke.

Specim. exam.: JAPAN. Honsyu. Prov. Musasi: Titibu, Mt. Mitumine, Kurokawa 510084-b (Kurok); Hikawa, M. Sato (fertile !) (TI). Prov. Sinano: Yatugatake Mts., Yanagigawa-Kitazawa, M. Togashi & Kurokawa (Asah); Minami-Saku-gun, Mt. Mikuni, Kurokawa 58560 (Kurok). Prov. Suruga: Mt. Fuji, Subasiri-guti, Asahina (Asah). Prov. Kii: Mt. Oodaigahara, M. Tsujibe (TI). Sikoku. Prov. Tosa: Nokawa, F. Fujikawa (Asah). Kyushu. Prov. Higo: Mt. Itibusa, F. Fujikawa (Asah). Isl. Yakusima: Kosugi-dani, R. Furuto (Sato 1880) (Sato). FORMOSA. Mt. Arisan Mingetsu, M. Sato (Taiwan-no. 10) fertile !, Jan. 24, 1936—holotype of *A. dendritica* var. *japonica* (TI).

Externally this species resembles *A. heterochroa* Vain., a widespread lichen of tropical and temperate zones. Both plants have similar laciniae and soralia, but the apothecia of *A. heterochroa* have soredia at their margins. In *A. japonica*, above all, the undersurface of the thallus is white at its apical part, while that of *A. heterochroa* is yellow containg indetermined yellow substance.

var. **reagens** Kurokawa var. nov.

Statura thalli ut in var. *japonica*, sed differt ab ea acidum norsticticum et interdum acidum salazinicum continente. Apothecia non visa. Ceterum ut in var. *japonica*.

Reaction: thallus K+yellow; med. K+yellow afterwards reddish yellow, PD+ yellow.

Chem. ingr.: atranorine, zeorin, norstictic acid and sometimes salazinic acid.

Distr.: Japan (Honsyu, Sikoku).

Specim. exam.: JAPAN. Honsyu. Prov. Simotuke: Nikko, H. Suzuki 386 (Kurok). Prov. Kozuke: Mt. Akagi, Kurokawa 58585 (Kurok). Prov. Musasi: Titibu, Mitagawa-mura, Kurokawa 550514(Kurok); Titibu, Mt. Mitumine, Kurokawa 56145 (Kurok); Nisi-Tama-gun, Ookuno-mura, Asahina (Asah). Prov. Sagami: Hakone, Mt. Kintoki, Kurokawa 58064, April 26, 1958 holotype (Kurok) and isotype (Asah, M, TNS, US). Prov. Sinano: Mt. Kobusi, Kurokawa 59211 (Kurok; Minami-Saku-gun, Azusayama, Kurokawa 59246 (Kurok).

13. **Anaptychia ophioglossa** (Tayl.) Kurokawa comb. nov.

? *Parmelia leucomela* var. *angustifolia* Mey. et Flot. in Nov. Act. Acad.

Leop. Carol. **19.** (Suppl.): 221 et tab. 3, fig. 6 (1843).

? *Parmelia leucomela* var. *angustifolia* f. *multifida* Mey. et Flot. in Nov. Act. Acad. Leop. Carol. **19** (Suppl.): 221 et tab. 3, fig. 7 (1843)—*Anaptychia leucomelaena* var. *multifida* Vain., Etud. Lich. Brés. **1**: 129 (1890) nom. tantum, excl. quoad specim. cit.

Parmelia ophioglossa Tayl. in Hook. London Journ. Bot. **6**: 172 (1847)—*Anaptychia leucomelaena* var. *ophioglossa* Zahlbr., Cat. Lich. **7**: 733 (1931).

'*Anaptychia leucomelaena* var. *latifolia*' sensu Müll. Arg. in Engler, Bot. Jahrb. **20**: 248 (1894) pr. maj. p.

Anaptychia hypocrocodes Vain. in Dansk Bot. Ark. **4**: 11 (1926).

f. **ophioglossa**

Thallus foliaceus, cinerascens vel albido-glaucescens, substrato laxe adnatus, laciniatus; laciniae elongatae linearesque, apicibus versus subascendens, 0.5–3 (raro 4) mm latae, basin versus interdum sensim angustatae, dichotome divisae, superne planae et laevigatae, subtus decorticatae, subplanae vel saepe canaliculatae, albidae sed partim vel saltem in apicibus sordide ferrugineae et albopruinosae, interdum indistincte sorediosae, in marginibus fibrillis atris, 5–9 mm longis, simplicibus vel interdum increbre ramosis ornatae.

In sectionibus transversis laciniarum cortex superior irregulariter vel subirregulariter incrassatus, internus fere dentato-flexuosus, 30–150 μ crassus, parte exteriore obscure cinerea 15–20 μ crassa, stratum gonidiale interdum fere usque ad superficiem attingens, discontinuum gonidiis 6–9 μ in diam., stratum medullare tenue et partim deficiens.

Apothecia rarissima, 1–5 mm lata, prope apices laciniarum enata, demum apicibus laciniarum recurvis, in marginibus lacinulata, lacinulis in marginibus fibrillis atris interdum instructis, intus decorticatis, partim albo-ferrugineis, extra corticatis, thallo concoloribus, disco fusco albo-pruinosisque. Hymenium hyalinum, 150–200 μ altum, J+coerulescens, epithecium leviter fuscum, excipulum proprium una cum hypothecio levissime fuscescens, ca 30 μ altum, J+coerulescens, asci oblongo clavati magnitudine 130–150×30–35 μ, 8-spori; sporae brunnescentes, ellipsoideae medio levissime constrictae, magnitudine 31–36×16–20 μ, 1-septatae, 2-loculares, loculis ovatis rhomboidalibusve, demum mox vesciulis parvis terminatis.

Reaction: thallus K+yellow; med. K+yellow afterwards reddish yellow, PD +deep yellow.

Chem. ingr.: atranorine, zeorin, salazinic acid and indetermined brown

substance.

Hab.: on bark of trees or on rocks.

Distr.: tropical and temperate zones.

Anaptychia ophioglossa is externally very similar to *A. leucomeraena* (see below), but it is characterized by producing salazinic acid along with atranorine, and zeorin. The undersurface of lacinia is white but partly or at least in its apical part whitish or sordid brown containing indetermined brown pigment, which is insoluble in acetone and K—. Most specimens recorded by many authors as *Physcia* (*Eorrera* or *Farmelia*) *leucomela* or *A. leucomelaena* in tropical and temperate zones are identical with this species. Up to date I have examined about 100 specimens from all over the world, but most of them are sterile. In Asia they rarely bear apothecia, and fertile specimens were collected in Formosa, Java and Philippines.

In the type specimen of *Farmelia ophioglossa* the laciniae are distictly tapering towards the base, but this character has no systematic importance. As Taylor mentioned in his original description, the laciniae are distinctly red especially in their apecies. This color may not be natural one, but is due to the decomposition of salazinic acid caused by the action of alkaline moisture. The same coloration is observed by Asahina[1] In *Parmelia conspersa*, *P. laevior*, *P. saxatilis* and *Usnea rubescens*.

The types of *Farmelia leucomela* var. *angustifolia* and f. *multifida* are probably lost at Berlin in World War II. Judging from the illustrations of the variety and the form by Meyen et Flotow, they are identical with this species.

The lectotype of *A. hypocrocodes* (Liebman, Pl. Mex., no. 6468 pr. p. was chosen), which is preserved in TUR, has typical form of this species.

Representative specim. exam.: JAPAN. Honsyu. Prov. Kii: Mt. Koya, 800m, Kurokawa 56070 (Kurok). FORMOSA. Taityu: Keitau, Asahina (fertile !) (Asah). PHILIPPINES. Luzon. Prov. Benguet: M. Ramos (Bureau of Sci., no. 5882, fertile !) (US); R.C. McGregor (Bureau of Sci., no. 8549) (US). JAVA: Ogata (fertile !)(Asash). HAWAII. Isl. Kauai: A.A. Heller 2645 (US). Isl. Hawaii: O. Degener & Y. Murashige 19831 (BISH). NORTH AMERICA. Massachusetts: New Bedford, H. Willey (US). Virginia: Madison Co., Hale 18908 (US); Sail-Pond Mt., C.L. Porlard & W.R. Maxon 169 (US). W. Virginia: Summers Co., 11682. N. Carolina: Linville, C.E. Cummings & A.B. Seymor, Dec. N. Amer. Lich., no. 11

1) Y. Asahina, Journ. Jap. Bot. **28**: 228 (1953).

(US). Geogia: Union Co., Hale 7354 (US). Texas: Emory Peak, R.A. Darrow 4553 (US). California: Monterrey, Capt. Beechey, without date—holotype of *Parmelia ophioglossa* (FH); Coast Range Mts., M.A. Howe 75 (US). MEXICO. Chinantla, Liebman, Pl. Mex. 6468 pr. p., May 1841.—lectotype of *A. hypocrocodes* (TUR: Herb. Vain., no. 7923); Pl. Mex., no. 7465—paratype of *A. hypocrocodes* (TUR: Herb., Vain., no. 7924). JAMAICA. Vicinity of Hollymount, W.R. Maxon 2309 (US). ECUADOR. Vam Vulkane Pichincha (M). VENEZUELA. Siela de Baracas, A. Jahn 266 (US); Ostlich von Los Venados, P.C. Vogl O.S.B. 364 (M). BRASIL. Rio de Janeiro, A. Glaziou (M, US). MADEIRA. J. Bornmüller, Pl. exs. Maderenses, no. 128 (Asah). SWITZERLAND. Prope Aatbal, C. Hegetschweiler 308 (US); Zürich, C. Hegetschweiler (Asah). FRANCE. Forêt de Coatloeh, des Abbeyes (RENN). BELGIAN CONGO. Mt. Ntnagongo, D.H. Linder 2151, 2151-a (US). UGANDA. Mulange, R.A. Dummer 940 (US). TANGANYIKA. Mt. Kilimanjaro, Stuhlmann 2340-a (G).

f. **albociliata** (Nyl.) Kurokawa comb. nov.

Physcia leucomela f. *albociliata* Nyl. in Ann. Sci, Nat. ser. 4, **19**: 309 (1863) —*Anaptychia leucomelaena* f. *albociliata* Hue in Nouv. Arch. Mus. ser. 4, **1**: 107 (1899).

Laciniae in marginibus fibrillis (ciliis) thallo concoloribus, simplicibus vel interdum increbre ramosis ornatae. Apothecia non visa. Ceterum ut in f. *ophioglossa*.

This form is distinguished from f. *ophioglossa* by color of cilia. In some specimens belonging to this form it is difficult to demonstrate salazinic acid by Asahina's microchemical method. The present form does not occur in Japan.

Representative specim. exam.: INDIA. Himalaya, Hook. fil. & Thoms. 1775 (Asah, M). AUSTRALIA. Without date and collector (s. n. Physcia leucomela v. subcomosa, probably det. by Müll. Arg.) (M). N. AMERICA. Florida: South of Fot Myers, S.B. Lummis (US). MEXICO. Orizaba, J.G. Smith 39 (US); Veracruz, J.A. Purpus (Asah, M, US). COLUMBIA. Lindig 2508—holotype of *Physcia leucomera* f. *albociliata* (H: Herb. Nyl., no. 2227).

14. **Anaptychia leucomelaena** (L.) Vain., Etud. Lich. Brés. **1**: 128 (1890); Lynge in Videnskapsselsk. Skrifter., mat. naturv. Kl., **16**: 17 (1924) pr. p.

Lichen leucomelos L., Sp. Pl. ed. 2, **2**: 1613 (1763).

Anaptychia leucomelaena var. *vulgaris* Vain., Etud., Lich. Brés. **1**: 128 (1890).

Although the present species does not occur in Japan as well as Eastern Asia,

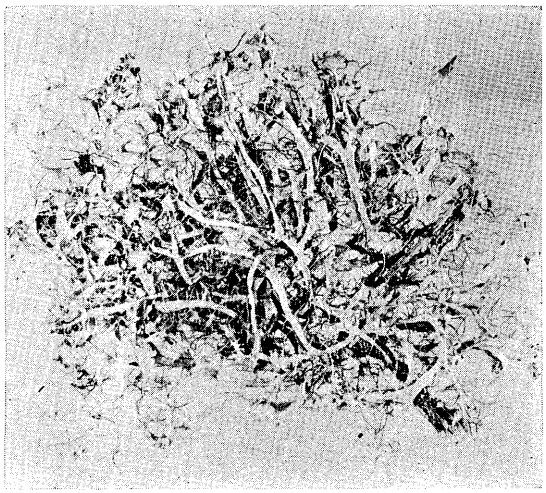

Fig. 13. Lectotype of *A. leucomelaena* var. *vulgaris* Vain. (Lich. Bras. Exc., no. 289) preserved in TUR(×0.9).

I intend to offer my opinion on it in this opportunity. Linné (1763) described *Lichen leucomelos* from "America meridionalis" based on a small fertile specimen. The type specimen preserved in the Herb. of Linnean Society was not at the time available for comparison, but Mr. S.A. Manning[2] was kind enough to send me a photograph of the type. Judging from the photograph the type specimen bears two apothecia at least, and it resembles *A. ophioglossa* and *A. leucomelaena* var. *vulgaris* Vain. In 1924, when Vainio transferred the species to the genus *Anaptychia*, he adopted the epithet "*leucomelaena*" as a grammatically acceptable one. At same time he described *A. leucomelaena* var. *vulgaris* as typical plant of this species, probably after examining the Linné's type specimen. Vainio's plant is endemic to South and Central America, and it generally bears apothecia. The undersurface of lacinia is white and partly reddish or sordid violet here and there by deposition of indetermined pigment, which is soluble in acetone and K+violet. Atranorine and zeorin are demonstrated by Asahina's microchemical method in all specimens. Even though it is difficult to confirm the deposition of the pigment in the photograph, it seems to be reasonable to consider the small fertile type specimen rather as *A. leucomelaena* var. *vulgaris* than *A. ophioglossa*.

Specim. exam.: MEXICO. Vallé, without date and collector, pr. min. p.(PC). BRASIL. Minas Geraes, Lafayette, Vainio, Lich. Bras. Exs., no. 289 lectotype (TUR: Herb. Vain., no. 7855); Vainio, Lich. Bras. Exs., nos. 227, 255, 270, 373, 375 and 959 paratypes (TUR: Herb. Vain., nos. 7858, 7853, 7856, 7857, 7859 and 7864 respectively); Caldas, S. Henschen (US); Rio de Janeiro, A. Glaziou 1808 (M).

2) To Mr. S.A. Manning (Kingham Hill School, Kingham, Oxon, England) I express my sincere thanks for his kind cooperation.

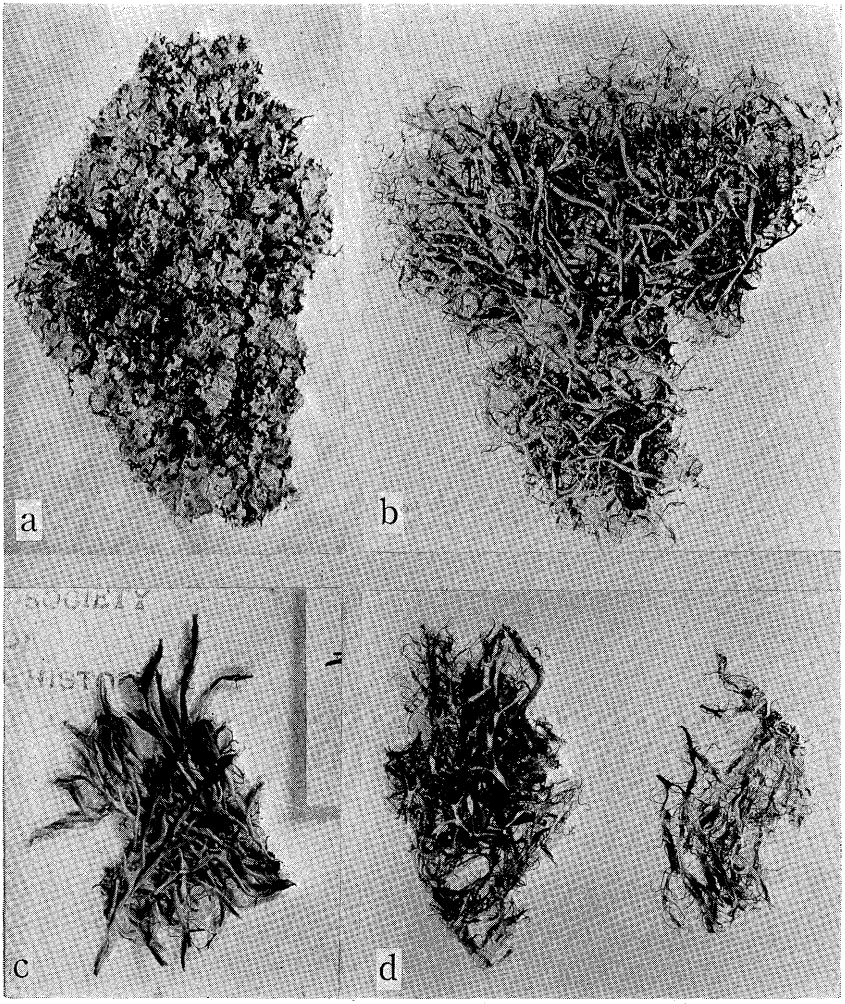

Plate 2. a: Holotype of *A. japonica* var. *reagens* (×6/10). b: Fertile specimen of *A. ophioglossa* collected by M. Ogata in Java (×7/10). c. Holotype of *Parmelia ophioglossa* (×1) d: Lectotype of *A. hypocrocodes* (7/10).